Michigan Department of Environmental Quality
Water Bureau

Technical Guidance for the Use of Polyacrylamides for Soil Erosion Control

Polyacrylamides (PAMs), are polymer-based materials used to facilitate erosion control and decrease soil sealing by binding soil particles, especially clays, to hold them on site. In addition, these types of materials may also be used as a water treatment additive to remove suspended particles from runoff. When used correctly and in concert with existing erosion control best management practices (BMPs), land applied PAMs should not enter surface waters of the state. The use of PAMs as a soil erosion control should be listed with all other BMPs as part of your soil erosion control plan.

PAMs are manufactured in various forms to be used on specific soil types, and are generally applied at a rate of up to 10 pounds/acre. Using the wrong form of a PAM on a soil will result in some degree of performance failure, and increase the potential for this material to enter surface waters. Exceeding the maximum application rates for this product does not increase the effectiveness of the product. In addition, applying these materials at rates beyond 10 pounds/acre may result in a violation of Michigan's Water Quality Standards as described by Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451). Therefore, *identification of on-site soil characteristics is essential to determine the correct product for application.*

A review of scientific literature and field demonstrations have identified several forms of PAMs that are potentially toxic to the aquatic environment and not suitable for use in Michigan. These toxic forms include:

1. Non-food grade PAMs. These PAMs contain residual monomer acrylamides in concentrations that may be toxic in the environment. Only food grade (National Sanitary Foundation/American National Standards Institute) or products containing less than 0.05 percent residual monomer by volume should be used.

2. Any cationic PAM or a form other than an anionic polymer. Only anionic forms of PAMs demonstrate non-toxic qualities.

3. Emulsion-based PAMs or any polymer that is pre-mixed in a substance other than pure water. Some of these emulsions have a surfactant base for easy application. While the polymer may not be toxic, some emulsions demonstrated significant toxicity during field trials.

Some PAMs are manufactured for specific use in drainage waterways to remove suspended particulates from runoff. Applying PAMs directly into surface waters of the state, or into drainage that will enter surface waters of the state will require approval from the Water Bureau (WB) of the Michigan Department of Environmental Quality (MDEQ). All requests involving the use of PAMs in direct contact with surface water, including facilities covered by National Pollutant Discharge Elimination System permits through Permit by Rule, or soil erosion and sedimentation control permits or plans, must be submitted to Mr. Gerald Saalfeld or Ms. Diana Klemans of the Surface Water Assessment Section of the SWQD, P.O. Box 30273, Lansing, Michigan 48909-7773. Requests should include the applicant's name and address; the specific application location; area and frequency of

treatment; name and amount of Pam(s) being used; and the name and location of receiving surface waters. Please specify if the characteristics of the PAM(s) meet the guidelines specified above and if on-site soil or sediment characteristics have been identified and matched to the appropriate polymer.

If you have any questions, please feel free to contact Mr. Mark Fife, MDEQ, WB, at 517-241-8993.

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